## WE CLAIM:

- 1. A system for performing wireless communications, comprising:
- a broadcast transmitter configured to transmit broadcast information over a wide area on a predetermined schedule;

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- a localcast transmitter configured to transmit local information over a local area, wherein the local area is smaller than the wide area; and
- a mobile device including a receiver, the receiver being configured to receive the broadcast information and the local information.
  - 2. A localcast transmitter, comprising:
    - a first interface;
    - an encoder coupled to said first interface;
    - a packet assembler coupled to said encoder;
    - a control function coupled to said first interface, said encoder and said packet assembler;
    - a modulator; and
    - an antenna.
- 3. The localcast transmitter in claim 2, wherein the localcast transmitter is further comprised of a data source for a local area transmission system.
- 4. The localcast transmitter in claim 2, wherein the first interface is further comprised of at least one of a USB-compatible interface, an RS-232 interface, and an IEEE-1394 interface.
- 5. The localcast transmitter in claim 2, wherein the control function collects transmit packets from the data source and performs handshaking functions.

- 6. The localcast transmitter in claim 2, wherein the localcast transmitter further comprises a second encoder.
- 7. The localcast transmitter in claim 2, wherein the packet assembler further performs the steps of interleaving encoded system information into data segments; adding correlation information to said data segments; and converting said data segments into a bit stream.
- 8. The localcast transmitter in claim 2, wherein the localcast transmitter is further configured to broadcast in a locally-unused portion of the FM band.
- 9. The localcast transmitter in claim 2, wherein the data source is further comprised of a personal computer system.
- 10. The localcast transmitter in claim 2, wherein the encoder is further comprised of a first convolutional encoder for system information.
- 11. The localcast transmitter in claim 10, wherein the encoder is further comprised of a second convolutional encoder for data.
- 12. A broadcast transmitter, comprising:

  an input-output controller coupled to a first input interface and to a buffer memory;
- a control processor coupled to said input-output controller and to a second input interface;
  - a precision time base coupled to said microprocessor;
- an encoding engine coupled to said input-output controller, said control processor, and to a first memory; and
- a subcarrier signal generator, coupled to said encoding engine, said control processor, a second memory, and to a subcarrier output.

- 13. The broadcast generator in claim 12, wherein the control processor includes at least one of a microprocessor, microcontroller, programmable logic array, programmable gate array, and an ASIC.
- 14. The broadcast generator in claim 12, wherein the input-output controller comprises a field-programmable gate array.
- 15. The broadcast generator in claim 12, wherein the first input interface further comprises at least one of an RS-422 interface, an RS-232 interface, an IEEE-1394 interface, a USB interface, or an Ethernet interface.
- 16. The broadcast generator in claim 12, wherein the second input interface further comprises at least one of an RS-232 interface an RS-422 interface, an RS-232 interface, an IEEE-1394 interface, a USB interface, or an Ethernet interface.
- 17. The broadcast generator in claim 12, wherein the precision time base is comprised of a 1-ppm oscillator.
- 18. The broadcast generator in claim 12, wherein the subcarrier signal generator is further comprised of a modulator, a digital-analog converter, and an output filter.
- 19. The broadcast generator in claim 18, wherein the modulator is further comprised of a field-programmable gate array.

A mobile device, comprising:
 an antenna assembly;

a real-time component comprising:

a system timing function,

a real-time event dispatching function,

and a digital radio;

a digital control and processing circuit;

a microcomputer assembly;

a random access memory;

a nonvolatile memory; and

a microprocessor-controlled user interface.

- 21. The mobile device in claim 20, wherein the mobile device is further configured to be worn on a person's wrist.
- 22. The mobile device in claim 21, wherein the mobile device is further configured to display the current time.
- 23. The mobile device in claim 20, wherein the mobile device is further configured to operate within a paging unit.
- 24. The mobile device in claim 20, wherein the mobile device is further configured to operate within a cellular telephone.
- 25. The mobile device in claim 20, wherein the mobile device is further configured to receive information content from a local-area transmitter and from a broadcast transmitter.
- 26. The system in claim 20, wherein the mobile device further comprises a transceiver.

27. The system in claim 26, wherein the mobile device is further configured to transmit and receive information from a second mobile device.

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- 28. The system in claim 27, wherein the mobile device is further configured to transmit and receive information from a plurality of mobile devices.
- 29. The mobile device in claim 20, wherein the mobile device is further configured to receive local information from a second mobile device.
- 30. A method of re-broadcasting data transmitted over an FM subcarrier, comprising the steps of:

receiving at a localcast transmitter the transmitted data;
locally formatting said transmitted data for local-area wireless transmission; and
retransmitting said locally formatted data from said localcast transmitter to a local
area.

- 31. The method of communicating information in claim 30 further comprising the step of adding local content information in said localcast transmitter to said locally formatted data for transmission over a local area.
- 32. The method of communicating information in claim 30 further comprising the step of adding application information in said localcast transmitter to said locally formatted data for broadcast over a local area.
- 33. The method of communicating information in claim 30 further comprising the steps of receiving said locally formatted data at a first mobile device; and retransmitting said locally formatted data from the first mobile device to a second mobile device.

34. A method of encoding a data stream, comprising the steps of:

partitioning said data stream into a plurality of data packets at a transmission
network center;

transmitting said data packets to a broadcast generator;
receiving said transmitted data packets at said broadcast generator;
writing said received data packets into an I/O memory of said broadcast generator;

reading a plurality of extracted data packets from said I/O memory in an order that differs from the order in which said received data packets arrived at said I/O memory block; encoding said extracted data packets into encoded data streams; and interleaving said encoded data streams into a plurality of interleaved data segments.

- 35. The method of claim 34, further comprising the steps of:
  determining whether a threshold amount of memory within said I/O memory has been filled by said received data packets; and initiating encoding of said received data packets if said determination is affirmative.
- 36. The method of claim 34, further comprising the steps of:
  indicating, within each of said data packets whether each of said data packets
  requires lower-latency transmission time; and
  modifying said interleaving based on whether said data packets require lowerlatency transmission time.
- 37. The method of claim 34, the encoding further comprising the steps of:
  performing a bitwise-exclusive-OR between each bit of said extracted data
  packets and each bit of a data pattern to produce a plurality of whitened data streams; and
  convolutionally encoding said whitened data streams thereby producing a
  plurality encoded data streams.

38. A method of transmitting data, comprising the steps of:
receiving a data stream including a plurality of data packets, wherein at least some
packets are designated as intended to be transmitted with low-latency; and

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interleaving said data packets over a frame except that the data packets designated as intended to be transmitted with low-latency are interleaved over a sub frame of the broadcast frame.

- 39. The method of claim 38, wherein said sub frame is one-fourth of said broadcast frame.
- 40. An apparatus for transmitting a signal in a wireless communications system including a data source, comprising:
- a localcast transmitter coupled to the data source and configured to transmit to a device over a local area and in a locally-unused FM frequency, wherein the device is:

configured to receive transmitted data from the localcast transmitter, and further configured to receive transmitted data from a wide-area broadcast transmitter.

41. An apparatus for transmitting a signal in a wireless communications system including a data source, comprising:

a localcast transmitter coupled to the data source and configured to transmit to and receive data from a device over a local area and in a locally-unused FM frequency, wherein the device is configured to receive the transmitted data from the localcast transmitter and to transmit other data to the localcast transmitter.

- 42. An apparatus for performing wireless communications, comprising:

  a device configured to receive a wireless communication transmitted in a
  broadcast mode, wherein the broadcast mode includes data transmitted over a wide area
  transmission medium, the device being further configured to transmit and receive additional
  wireless communications transmitted in a localcast mode, wherein the localcast mode includes
  data transmitted or received over a local area transmission medium.
- 43. An apparatus for performing wireless communications, comprising:

  a mobile device configured to receive a wireless communication transmitted in a broadcast mode, wherein the broadcast mode includes data transmitted over a wide area transmission medium, the mobile device being further configured to receive additional wireless communications transmitted in a localcast mode, wherein the localcast mode includes data transmitted over a local area transmission medium.

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